

ABSTRACT

A liquid crystal element including a liquid crystal cell that has transparent substrates having electrodes and a liquid crystal layer sandwiched between the substrates, the liquid crystal cell having a retardation value for a linearly polarized light having a wavelength of  $\lambda$  incident and transmitting through the liquid crystal cell, the retardation value changing from  $R_1$  to  $R_2$  ( $R_1 > R_2 > 0$ ) when a first voltage  $V_1$  applied between the electrodes is changed to a second voltage  $V_2$  ( $V_1 \neq V_2$ ). The liquid crystal element also includes a phase plate having a retardation value  $R$  for a linearly polarized light having the wavelength of  $\lambda$ , the retardation value  $R$  satisfying a relation  $R + R_v = m \times \lambda$  ( $m$ : integer) with a retardation value  $R_v$  generated by a third voltage satisfying  $R_1 \geq R_v \geq R_2$ .